

6.0 Unavoidable Impacts, Short-Term Uses and Long-Term Productivity, and Irreversible or Irretrievable Commitment of Resources

<p>In addition to a discussion of the environmental impacts of the proposed action and a discussion of alternatives, NEPA requires that an EIS contain information on any adverse environmental impacts that are unavoidable, on short-term uses and long-term productivity of the environment, and on any irreversible or irretrievable commitment of resources.</p>

6.1 Unavoidable Adverse Impacts

Under all action alternatives, there would be a very slight increase in radiation doses to the public and workers as a result of remediation and disposal activities, which could result in a very slight increase in excess cancer risk based on a 5-year remediation period and a 30-year post remediation exposure period. For these activities, the highest increased total risk of a latent cancer fatality for the maximally exposed member of the public in Moab for the duration of the activities would be $3.9\text{E-}3$ under the on-site disposal alternative; the total risk of a latent cancer fatality for the maximally exposed member of the public in Moab for the duration of the activities under the off-site disposal alternatives would be $8.8\text{E-}3$. In addition, radon exposures at the off-site disposal sites would result in a latent cancer fatality risk to the maximally exposed member of the public of $2.2\text{E-}5$ at Klondike Flats, $9.4\text{E-}5$ at Crescent Junction, and $9.7\text{E-}6$ at White Mesa Mill.

For the population around Moab, the total risk of a latent cancer fatality would be 0.26 for the on-site disposal alternative. The total risk of a latent cancer fatality for the population around Moab for the off-site disposal alternatives would be 1.0 if the truck or rail transportation options were used, or 0.74 latent cancer fatalities if the slurry pipeline option were used. In addition, radon exposures at the off-site disposal sites would result in a latent cancer fatality risk of 0.014 for the population around Klondike, 0.010 for the population around Crescent Junction, and 0.015 for the population around White Mesa.

Under the action alternatives, it is estimated that there would be 12 latent cancer fatalities in the population exposed at vicinity properties. If the vicinity properties were not remediated, it is estimated that there would be 26 latent cancer fatalities in the population exposed at vicinity properties. For the maximally exposed individual at the vicinity properties, the risk of a latent cancer fatality is estimated to be 0.029 for the action alternatives and 0.067 if the vicinity properties were not remediated.

Under the action alternatives, there would be an unavoidable increase in truck and other construction-related traffic and traffic due to commuting workers. This unavoidable adverse impact would occur 5 to 7 days a week, would last for the duration of Moab site surface remediation activities (up to 8 years), and would primarily but not exclusively impact US-191. Off-site transportation of tailings by truck would result in the greatest increase in traffic. The highest traffic impacts would occur if tailings were trucked to White Mesa Mill. Under this disposal alternative and transportation mode there would be an unavoidable impact (121 percent increase in truck traffic) on the already congested traffic situation in downtown Moab.

Additional traffic and noise associated with remediation activities would result in displacement and increased mortality of wildlife close to construction areas and transportation routes.

Under all off-site alternatives, projected annual withdrawals of Colorado River water would exceed the 100-acre-foot protective limit set by USF&WS. Maximum estimated annual requirements range from 235 to 730 acre-feet and would continue for 3 to 5 years, depending on work schedules and transportation modes. Pipeline transportation to Klondike Flats or Crescent Junction would require the greatest volume of Colorado River water; river water requirements for a pipeline to White Mesa Mill would be partially offset by the use of Recapture Reservoir for recycle water.

Unavoidable adverse impacts to cultural resources and traditional cultural properties would likely occur under all but the No Action alternative. Unavoidable impacts would be greatest under the White Mesa Mill alternative. The density, variety, and complexity of cultural resources that would be unavoidably and adversely affected would be so great under the White Mesa Mill alternative that mitigation would be extremely difficult. Although a similar potential for unavoidable adverse effects would occur under the other alternatives, the lower densities of known resources would allow mitigation measures to be more easily implemented.

6.2 Relationship Between Local Short-Term Uses of the Environment and Long-Term Productivity

Implementation of the alternatives would create a conflict between the local short-term uses of the environment and long-term productivity. Under all alternatives, land required for the disposal cell would be unavailable for other uses in perpetuity. This conflict would be more significant for the on-site disposal alternative, given the proximity of the Moab site to the city of Moab and to heavily used recreation areas such as Arches National Park. Under the on-site alternative, at least the entire 130-acre pile would be unavailable for other uses in perpetuity. Moreover, under all alternatives, the area at the Moab site used for ground water treatment would be unavailable for at least 75 years. This area could be 40 acres or more if an evaporation technology were implemented. Also under any alternative, the final decisions on possible future release and uses of the approximately 309-acre off-pile area of the Moab site must be deferred pending a determination of the success of surface remediation.

Under the off-site alternatives, the 346- to 439-acre disposal cell areas would be unavailable in perpetuity. This conflict would be the least significant for the White Mesa Mill site alternative because that site already includes four uranium mill tailings disposal cells.

6.3 Irreversible or Irretrievable Commitment of Resources

The irreversible or irretrievable commitment of resources that would occur if the on-site or off-site disposal alternatives were implemented are (1) the use of fossil fuels in the transport of tailings and borrow materials, (2) the use of borrow materials, (3) the use of steel if the slurry pipeline transport were chosen, and (4) the use of land for the disposal cell in perpetuity. All alternatives would require an irretrievable commitment of millions of gallons of diesel fuel. The estimated total diesel fuel consumption for the on-site disposal alternative would be 4 to 5 million gallons (see Section 2.1.5.4). The estimated total diesel fuel consumption for off-site disposal would range from 12 to 20 million gallons for truck transportation, from 10 to

11 million gallons for rail transportation, and from 7 to 9 million gallons for slurry pipeline transportation.

Implementation of any of the alternatives would also require the use of borrow materials to cap the tailings pile and for site reclamation. These materials would include cover soils, radon/infiltration barrier soils, sand and gravel, and riprap. DOE estimates that the total volume of irretrievably committed borrow material would be approximately 1.7 million yd³ for the on-site disposal alternative and 2.2 million yd³ for each of the off-site disposal alternatives. DOE estimates that the maximum area of land that would be disturbed to extract borrow materials would be 550 acres for the on-site disposal alternative, 690 acres for the Klondike Flats or the Crescent Junction off-site disposal alternatives, and 174 acres for the White Mesa Mill off-site disposal alternative. The estimated acres of disturbed land do not include disturbances associated with obtaining sand, gravel, or riprap from commercial vendors. DOE believes these estimates represent maximum areas of disturbance; however, the final acreage of disturbed land would depend on the selection of borrow areas and depths to which borrow soils would be extracted.

Pipeline transport of tailings for off-site disposal would use between 4,400 tons (for Klondike Flats) and 24,000 tons (for White Mesa Mill) of steel that may become sufficiently contaminated to require disposal in the cell.

Under any alternative, there would be an irreversible and irretrievable commitment of the land that would be dedicated to the disposal cell. These commitments are described in Section 6.2.

All alternatives would result in the irretrievable commitment of Colorado River water, although the usages would all be within the limits of DOE's Colorado River water usage rights. Much of the use would be irretrievable because the water would be used for on-site or off-site decontamination, other construction-related uses, or possibly slurry production and ultimately would evaporate in double-lined evaporation ponds. The estimated maximum annual consumption of nonpotable water is 130 to 235 acre-feet for the rail transportation option, 135 to 240 acre-feet for truck transportation, and 730 acre-feet for slurry pipeline transportation (see Table 2-24). This water would be drawn from the Colorado River for the Klondike Flats and Crescent Junction alternatives. For the White Mesa Mill alternative, part of the decontamination water and the slurry pipeline makeup water would be drawn from the Recapture Reservoir. These annual figures are conservative upper bounds for irretrievable commitments of nonpotable water.

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